

We claim :

1. A method for determining relevancy of real time received terms, the method comprising the steps of:
 - determining relevancy keywords;
 - extracting real time terms from currently received information streams;
 - updating current reception patterns of relevancy keywords in response to a comparison between the extracted real time terms and the relevancy keywords; and
 - determining a relevancy of relevancy keywords in response to a comparison between current reception patterns and reference reception patterns.
2. The method of claim 1 wherein at least one relevancy keyword is extracted from an alert criterion of a client.
3. The method of claim 1 wherein at least one relevancy keyword is extracted from a client query.
4. The method of claim 1 further comprising a step of updating at least one client as to the relevancy of at least one relevancy keyword.
5. The method of claim 1 further comprising a step of estimating flow patterns of the received information streams.
6. The method of claim 5 wherein the current reception patterns of relevancy keywords are further responsive to the estimated flow patterns of the received information streams.
7. The method of claim 5 wherein the step of estimating flow patterns comprising monitoring the reception of flow keywords.

8. The method of claim 7 wherein flow keywords comprise commonly used words.

9. The method of claim 1 further comprises a step of storing the real time terms in a storage means for a predetermined period of time;

wherein a step of storing a real time term is preceded by a preprocessing step selected from a group consisting of:

- adding control data to the information packets;
- filtering the information packets;
- adding control information to the filtered information packets;
- extracting real time terms from the filtered information packets;
- filtering the real time terms to generate real time terms; and
- storing the real time terms in a storage means.

10. The method of claim 9 wherein the control data comprising of at least one parameter selected from the group consisting of : (i) information packet identification; (ii) information source identification, (iii) time of arrival, (iv) alert identification; and (v) query identification.

11. The method of claim 9 wherein the real time terms are extracted out of the filtered information packets by parsing and stemming the plurality of information packets; and

wherein the step of filtering further comprising a step selected from a group consisting of : (a) discarding said terms constructed of one-letter words; (b) discarding said terms constructed of frequently used words; (c) discarding said terms constructed of stop-words; and (d) discarding said terms constructed of predefined words.

12. The method of claim 9 wherein a reception of an information packet is followed by the steps of :

storing information packet with an associated packet identifier in the

storage means;

storing real time term information representative of a reception of at least one real time term at the storage means; and

linking between the stored information packet and the real time term information.

13. The method of claim 12 wherein a deletion of an information packet is followed by a step of deleting the linked real time term information.

14. The method of claim 13 wherein the information packet are stored in a messages hash, and wherein the linked real time term information is stored in a terms hash.

15. The method of claim 14 wherein the real time term information comprising of at least one information field selected from a group consisting of:

a last modification time field, indicating a most recent time of reception of the real time term, during a predetermine period of time;

a number of channels containing term, indicating a number of information sources that provided the real time term during a predetermine period of time;

a total instances field, indicating a total amount of receptions of the real time term during a predetermine period of time; and

a terms inverted entries map, comprising of a plurality of terms inverted file entries, each entry holding information representative of a reception of the real time term from a single information source during a predetermine period of time.

16. The method of claim 15 wherein each inverted file entry comprising of at least one field selected from a group consisting of:

a channel identifier, for identifying the information source that provided the real time term during a predetermine period of time;

instances number, for indicating a total amount of receptions of the real time term from an information source during a predetermine period of time; and

time of last appearance, for indicating a most recent time of reception of the real time term from an information source during a predetermine period of time.

17. The method of step 16 wherein each information packet is further associated to a message terms key map, said message key map comprising of a plurality of message characteristic entries, each message characteristic entry associated to an real time term being extracted from the information packet, said message characteristic entry comprising of at least one of the following fields selected from a group consisting of :

- a term inverted file, for pointing to the term extracted information;
- an instance of number, for indicating a number of time said real time term appeared in the information packet; and
- an inverted file entry, for pointing to a terms inverted file entry.

18. The system of claim 2 wherein information packets comprise of content selected from a group consisting of: text, audio, video, multimedia, and executable code streaming media.

19. The method of claim 1 further comprising a step of compensating for time differences resulting from a reception of information streams from distinct geographical locations.

20. The method of claim 1 further comprising a step of compensating for time differences resulting from a reception of information streams relating to events that occur at distinct geographical locations.

21. The method of claim 1 wherein the current reception patterns reflect the reception of relevancy keywords during a test period.

22. The method of claim 1 wherein the current reception patterns reflect the reception of relevancy keywords during at least two test periods.

23. The method of claim 22 wherein the at least test periods at least partially overlap.

24. The method of claim 22 wherein each of the at least two test periods is characterized by a corresponding current reception pattern.

25. The method of claim 24 wherein the step of determining a relevancy of relevancy keywords comprising comparisons between each corresponding current reception patterns and between the reference reception pattern.

26. The method of claim 25 wherein each comparison out of the at least two comparisons provides a comparison result; and wherein the determination of the relevancy value is responsive to a combination of the at least one comparison result.

27. The method of claim 22 wherein the reference reception pattern reflects the reception of a relevancy keyword during a time period that is much longer than each of the test periods

28. The method of claim 1 wherein the step of determining a relevancy of relevancy keywords comprising attaching a relevancy level to relevancy keywords.

29. The method of claim 27 wherein the relevancy values are defined by relevancy value thresholds.

30. The method of claim 22 wherein the reference reception pattern reflects the reception of a relevancy keyword during a time period that is much longer than each of the test periods.

31. In a computing environment running on a computer platform utilized as a central server system, a method of calculating the relevancy of relevancy keywords is operating in order to make available the capability for users of client systems connectable thereto of receiving indications about the relevancy of relevancy keywords in response to the reception of real time terms by the central server system, the method comprising of the steps of:

determining relevancy keywords;
extracting real time terms from currently received information streams;
updating current reception patterns of relevancy keywords in response to a comparison between the extracted real time terms and the relevancy keywords; and
determining a relevancy of relevancy keywords in response to a comparison between current reception patterns and reference reception patterns.

32. The method of claim 31 wherein at least one relevancy keyword is extracted from a client query.

33. The method of claim 31 wherein at least one relevancy keyword is extracted from an alert criterion of a client.

34. The method of claim 31 further comprising a step of updating at least one client as to the relevancy of at least one relevancy keyword.

35. The method of claim 31 further comprising a step of estimating flow patterns of the received information streams.

36. The method of claim 35 wherein the current reception patterns of relevancy keywords are further responsive to the estimated flow patterns of the received information streams.

37. The method of claim 35 wherein the step of estimating flow patterns comprising monitoring the reception of flow keywords.

38. The method of claim 37 wherein flow keywords comprise commonly used words.

39. The method of claim 31 wherein information packets comprise of content selected from a group consisting of: text, audio, video, multimedia, and executable code streaming media.

40. The method of claim 31 further comprising a step of compensating for time differences resulting from a reception of information streams from distinct geographical locations.

41. The method of claim 31 further comprising a step of compensating for time differences resulting from a reception of information streams relating to events that occur at distinct geographical locations.

42. The method of claim 31 wherein the current reception patterns reflect the reception of relevancy keywords during a test period.

43. The method of claim 31 wherein the current reception patterns reflect the reception of relevancy keywords during at least two test periods.

44. The method of claim 43 wherein the at least test periods at least partially overlap.

45. The method of claim 44 wherein each of the at least two test periods is characterized by a corresponding current reception pattern.

46. The method of claim 45 wherein the step of determining a relevancy of relevancy keywords comprising comparisons between each corresponding current reception patterns and between the reference reception pattern.

47. The method of claim 46 wherein each comparison out of the at least two comparisons provides a comparison result; and wherein the determination of the relevancy value is responsive to a combination of the at least one comparison result.

48. The method of claim 43 wherein the reference reception pattern reflects the reception of a relevancy keyword during a time period that is much longer than each of the test periods

49. The method of claim 31 wherein the step of determining a relevancy of relevancy keywords comprising attaching a relevancy level to relevancy keywords.

50. The method of claim 49 wherein the relevancy values are defined by relevancy value thresholds.

51. The method of claim 43 wherein the reference reception pattern reflects the reception of a relevancy keyword during a time period that is much longer than each of the test periods.

52. A relevancy determination unit comprising:

- a first interface for receiving information relating to a reception of relevancy keywords;

- a processor for calculating current reception patterns and previous reception patterns in response to the reception of information relating to the reception of relevancy keywords;

- a storage unit, coupled to the first interface and the processor, for storing current reception patterns, previous reception patterns and information relating to the reception of relevancy keywords.

53. The relevancy determination unit of claim 52 wherein the processor is operable to determine a relevancy of relevancy keywords in response to a comparison between current reception patterns and reference reception patterns.
54. The relevancy determination unit of claim 52 wherein at least one relevancy keyword is extracted from a client query.
55. The relevancy determination unit of claim 52 wherein the first interface is coupled to a search engine for receiving terms extracted from a client query.
56. The relevancy determination unit of claim 52 wherein at least one relevancy keyword is extracted from an alert criterion.
57. The relevancy determination unit of claim 52 wherein the first interface is coupled to an alert module for receiving at least one terms extracted from an alert criterion.
58. The relevancy determination unit of claim 52 further operable to update at least one client as to the relevancy of at least one relevancy keyword.
59. The relevancy determination unit of claim 52 wherein the processor is further adapted to estimate flow patterns of the received information streams.
60. The relevancy determination unit of claim 52 wherein the current reception patterns of relevancy keywords are further responsive to the estimated flow patterns of the received information streams.
61. The relevancy determination unit of claim 59 wherein the processor is further adapted to monitor the reception of flow keywords.

62. The relevancy determination unit of claim 61 wherein flow keywords comprise commonly used words.

63. The relevancy determination unit of claim 52 wherein information streams include text, audio, video, multimedia, and executable code streaming media.

64. The relevancy determination unit of claim 52 further configured to compensate for time differences resulting from a reception of information streams from distinct geographical locations.

65. The relevancy determination unit of claim 52 further adapted to be coupled to a time zone unit for compensating for time differences resulting from a reception of information streams from distinct geographical locations.

66. The relevancy determination unit of claim 52 further configured to compensate for time differences resulting from a reception of information streams relating to events that occur at distinct geographical locations.

67. The relevancy determination unit of claim 52 further adapted to be coupled to a time zone unit for compensating for time differences resulting from a reception of information streams relating to events that occur at distinct geographical locations.

68. The relevancy determination unit of claim 52 wherein the current reception patterns reflect the reception of relevancy keywords during a test period.

69. The relevancy determination unit of claim 52 wherein the current reception patterns reflect the reception of relevancy keywords during at least two test periods.

70. The relevancy determination unit of claim 69 wherein the at least test periods at least partially overlap.

71. The relevancy determination unit of claim 69 wherein each of the at least two test periods is characterized by a corresponding current reception pattern.

72. The relevancy determination unit of claim 71 wherein the relevancy determination includes comparing between each corresponding current reception patterns and between the reference reception pattern.

73. The relevancy determination unit of claim 72 wherein each comparison out of the at least two comparisons provides a comparison result; and wherein the determination of the relevancy value is responsive to a combination of the at least one comparison result.

74. The relevancy determination unit of claim 69 wherein the reference reception pattern reflects the reception of a relevancy keyword during a time period that is much longer than each of the test periods

75. The relevancy determination unit of claim 52 wherein the processor is further adapted to attach a relevancy level to relevancy keywords.

76. The relevancy determination unit of claim 75 wherein the relevancy values are defined by relevancy value thresholds.

77. A system for receiving and processing real time terms, the system comprising:

- a search engine, for receiving and processing information streams and providing an indication reflecting at least one match between a query provided by a client and real time terms extracted from the information streams;

- a relevancy determination unit, the relevancy determination unit coupled to the search engine for receiving an indication reflecting at least one match between a query provided by a client and real time terms extracted from the information

streams; and for determining whether the real time terms match a relevancy keyword;

wherein the a relevancy determination unit comprising: a first interface for receiving information relating to a reception of relevancy keywords; a processor for calculating current reception patterns and previous reception patterns in response to the reception of information relating to the reception of relevancy keywords; a storage unit, coupled to the first interface and the processor, for storing current reception patterns, previous reception patterns and information relating to the reception of relevancy keywords.

78. The system of claim 77 further comprising at least one module selected from a group of modules consisting of :

- a message coordinator module adapted to coordinate a handling of a plurality of information packets;

- a message buffer adapted to hold temporarily the plurality of information packets;

- a message filter module for filtering the plurality of information packets according to predefined rules;

- a term extractor module for performing parsing and stemming on said plurality of information packets;

- a terms filter for excluding real time terms according to predefined rules;

- a queries coordinator module to coordinate the processing of client queries;

- a query-term extractor to parse and stem incoming queries in order to extract and process operative query-terms; and

- a query-terms filter for excluding specific query-terms in a predefined manner.

79. The system of claim 78 wherein the storage means is a term index data structure.

80. The system of claim 79 wherein the term index data structure is adapted to hold indexed real time terms and information packet identifiers.
81. The system of claim 80 wherein the term index data structure further comprising:
- a terms hash table to hold extracted, filtered and processed terms;
 - a terms inverted file pointed to by said term hash table holding a terms inverted entry map;
 - a messages hash table to hold information packets identification;
 - a messages data table to hold information packets data; and
 - a channel map to hold a list of information sources and the related number of index terms of said information source.
82. The system of claim 81 wherein the terms inverted file further comprising:
- a terms inverted entries map table;
 - a total instances of said term;
 - a number of information sources containing said term; and
 - a last modification time of said term.
83. The system of claim 82 further comprising:
- a message terms keyed map;
 - an information source identification; and
 - an information packet time of arrival.
84. The system of claim 83 wherein the message terms keyed map further comprising:
- a pointer to said terms inverted file;
 - an instances number of said term in said information packet; and
 - a pointer to said inverted file entry related to said term.

85. The system of claim 84 wherein the terms inverted entries map further comprising;

an information source identification;

an instances number of said term in said information source informational content; and

a time of last appearance of said term in said information source informational content.

86. The system of claim 77 further comprising of at least one of the following means :

adding means for adding control data to said information packets;

filtering means for the plurality of information packets;

processing means for said real time terms by adding control information to said real time terms; and

term filtering means for the real time terms to generate filtered real time terms.

87. The system of claim 77 wherein the real time terms are extracted out of the plurality of information packets by parsing and stemming the plurality of information packets; and

wherein the term filtering means are adapted to (a) discarding said terms constructed of one-letter words; (b) discarding said terms constructed of frequently used words; (c) discarding said terms constructed of stop-words; and (d) discarding said terms constructed of predefined words.

88. The system of claim 87 wherein the control data comprising of information packet identification, information source identification and time of arrival.

89. The system of claim 77 further adapted to receive an information packet, to store information packet with an associated packet identifier in an information packet storage means, store real time term information representative of a

reception of at least one real time term, said at least one real time terms extracted from the information packet; and to link between the stored information packet and the real time term information.

90. The system of claim 89 further adapted to delete an information packet and delete the linked real time term information.

91. The system of claim 89 wherein information packet are stored in a messages hash, and wherein the linked real time term information is stored in a terms hash.

92. The system of claim 89 wherein the real time term information comprising of at least one information field selected from a group consisting of:

- a last modification time field, indicating a most recent time in which the real time term was received;

- a number of channels containing term, indicating a number of information sources that provided the real time term;

- a total instances field, indicating a number of times the real time term was provided; and

- a terms inverted entries map, comprising of a plurality of terms inverted file entries, each entry holding information representative of a reception of the real time term from a single information source.

93. The system of claim 92 wherein each inverted file entry comprising of at least one field selected from a group consisting of :

- a channel identifier, for identifying the information source that provided the real time term;

- instances number, for indicating a number of times the real time term was provided by an information source; and

- time of last appearance, for indicating a most recent time in which the real time term was received from an information source.

94. The system of step 92 wherein each information packet is further associated to a message terms key map, said message key map comprising of a plurality of message characteristic entries, each message characteristic entry associated to an real time term being extracted from the information packet, said message characteristic entry comprising of at least one of the following fields selected from a group consisting of :

- a term inverted file, for pointing to the term extracted information;
- an instance of number, for indicating a number of time said real time term appeared in the information packet; and
- an inverted file entry, for pointing to a terms inverted file entry.

95. The system of claim 77 further adapted to insert an real time term into a terms hash table and into a terms inverted file, insert an information source identification, said information source provided the real time term, to a terms inverted entry map table in said terms inverted file, insert information packet data in a messages hash table; insert the real time term from said information packet to a messages data table; increase a value of instances in said messages data table by one; and update a value of information source identification in said message data table.

96. The system of claim 95 further adapted to extract an real time term and accordingly to perform at least one operation selected from a group consisting of :
increase a value of total instances in said terms inverted file;

- update a value of last modification time in said terms inverted file;
- increase a value of instances number in said inverted entry map table associated with said information source identification in said terms inverted file; and
- update a value of message time in said messages data table.

97. The system of claim 77 further adapted to delete an information packet, and accordingly to perform at least one operation selected from a group consisting of:

receive an information packet identification, whereas the terms extracted from the information packets are to be deleted;

read the information packet identification from the messages hash table in said terms index data structure;

obtain relevant entries of said real time terms belonging to said information packet in said messages data; and

access said terms inverted file for each said terms entry pointed to said terms inverted file.

98. The system of claim 77 further comprising an alert module for matching between alert terms and real time terms.

99. The method of claim 1 wherein the current flow patterns are responsive to at least one weight factor associated to at least one source of received information stream.

100. The method of claim 31 wherein the current flow patterns are responsive to at least one weight factor associated to at least one source of received information stream.

101. A system for receiving and processing real time terms, the system comprising:

an alert module, for receiving and processing information streams and providing an indication reflecting at least one match between at least one alert criterion provided by a client and real time terms extracted from the information streams;

a relevancy determination unit, the relevancy determination unit coupled to the alert module for receiving an indication reflecting at least one match between at least one alert criterion provided by a client and real time terms extracted from the information streams; and for determining whether the real time terms match a relevancy keyword;

wherein the a relevancy determination unit comprising: a first interface for receiving information relating to a reception of relevancy keywords; a processor for calculating current reception patterns and previous reception patterns in response to the reception of information relating to the reception of relevancy keywords; a storage unit, coupled to the first interface and the processor, for storing current reception patterns, previous reception patterns and information relating to the reception of relevancy keywords.

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